

In re: Michael J. Collins et al.
Serial No. 10/064,623
Filed: July 31, 2002
Page 2

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows:

1-27. (canceled)

28. (original) A method of microwave assisted chemistry comprising:
directing a continuous flow of fluid through a single mode microwave cavity while
applying microwave radiation to the cavity and to the continuous flow of materials therein;
directing the fluid from the cavity to a spectroscopic flow cell and spectroscopically
evaluating the fluid; and
moderating the conditions in the cavity in response to the spectroscopic evaluation.

29. (original) A method according to Claim 28 wherein the step of directing the fluid
to a spectroscopic flow cell comprises directing the fluid to a sample line and
spectroscopically evaluating the fluid in the sample line.

30. (original) A method according to Claim 28 or Claim 29 wherein the spectroscopy
is selected from the group consisting of ultraviolet, infrared and Raman spectroscopy.

31. (original) A method according to Claim 28 wherein the step of moderating the
cavity conditions comprises cooling the fluid flow in the cavity.

32. (original) A method according to Claim 28 wherein the step of moderating the
cavity conditions comprises adjusting the fluid flow rate through the cavity.

In re: Michael J. Collins et al.
Serial No. 10/064,623
Filed: July 31, 2002
Page 3

33. (original) A method according to Claim 28 wherein the step of moderating the cavity conditions comprises moderating the microwave power applied in the cavity.

34. (currently amended) An instrument for microwave assisted chemistry comprising:

a microwave cavity;
a flow cell in said cavity;
a spectroscopy cell external to said cavity and in fluid communication with said flow cell; and

a spectrometer with said spectroscopy cell in the optical path of said spectrometer for analyzing the characteristics of fluids flowing from said flow cell and through said spectroscopy cell; and

a system for moderating conditions in the cavity in response to spectroscopic analysis by said spectrometer of fluids flowing from said flow cell and through said spectroscopy cell.

35. (previously presented) An instrument according to Claim 34 comprising a pump in fluid communication with said flow cell for directing fluids from a source and into said flow cell in said cavity.

36. (original) An instrument according to Claim 34 and further comprising a system for cooling said flow cell in said cavity during the application of microwaves to said cavity.

37. (original) An instrument according to Claim 34 comprising a single mode cavity.

38. (original) An instrument according to Claim 34 wherein said spectrometer is selected from the group consisting of infrared spectrometers, ultraviolet spectrometers, and Raman spectrometers.

In re: Michael J. Collins et al.
Serial No. 10/064,623
Filed: July 31, 2002
Page 4

39. (original) An instrument according to Claim 36 and further comprising a processor in signal communication with said spectrometer and with said cooling system.

40. (original) An instrument according to Claim 39 comprising a microwave source in microwave communication with said cavity and in signal communication with said processor; said microwave source being selected from the group consisting of magnetrons, klystrons and solid state devices.

41. (original) An instrument according to Claim 40 comprising a pressure detector in fluid communication with said flow cell and in signal communication with said processor.

42. (original) An instrument according to Claim 40 comprising a temperature detector in said cavity and in signal communication with said processor.

43. (original) An instrument according to Claim 40 comprising a waveguide between said source and said cavity and in microwave communication with said source and said cavity.

44. (previously presented) An instrument for microwave assisted chemistry comprising:

a microwave cavity;
an attenuator releasably engaged with said cavity and in microwave communication with said cavity;
a flow cell releasably engaged with said attenuator in a manner that fixes the positions of said attenuator and said flow cell with respect to one another when they are engaged and that correspondingly fixes said flow cell in the same position with respect to said cavity when said attenuator is engaged with said cavity.

In re: Michael J. Collins et al.
Serial No. 10/064,623
Filed: July 31, 2002
Page 5

45. (canceled)

46. (previously presented) An instrument according to Claim 34, wherein said spectrometer is an absorption spectrometer comprising a source for directing radiation through said fluids and a detector for detecting the radiation after the radiation passes through said fluids.